The AVIRIS Data Calibration and Distribution Subsystem in 1999

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OVERVIEW

- Objectives
- Primary Output to Investigators
- History
- Current Status
- Challenges
- Plans for 2000
- Summary and Conclusion

OBJECTIVE

- Design, implement, and operate OTS hardware/software
- Design, develop, operate AVIRIS specific software
- Archive all AVIRIS data
- Assess performance of AVIRIS in 48 hours from flight
- Support calibration validation science

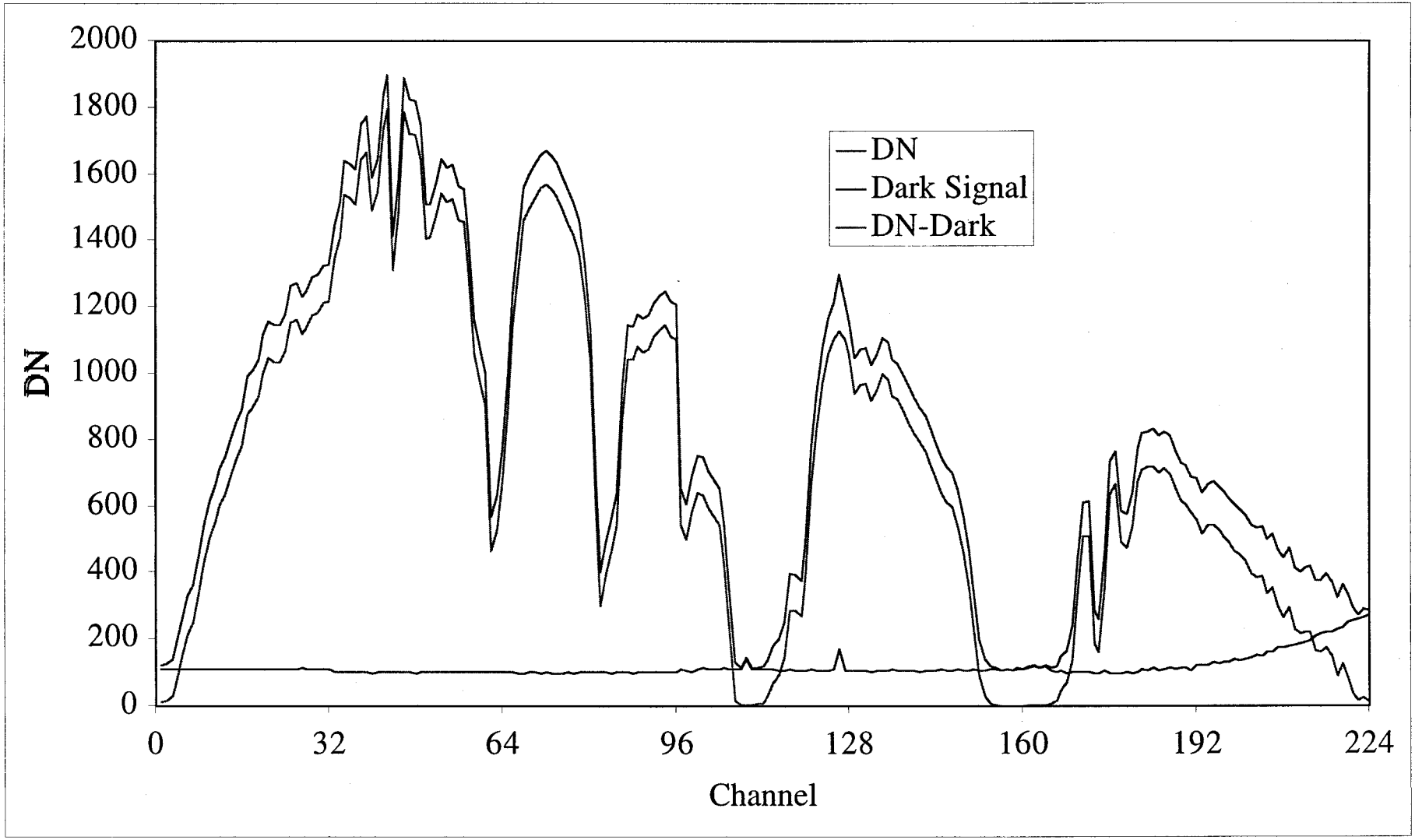
OBJECTIVE continued

- Calibrate and deliver AVIRIS data to investigators
  - 1989 to 1997
    - ER-2 calibrated radiance
  - 1998 to present (4X expansion in products)
    - ER-2 calibrated radiance
    - Twin Otter calibrated radiance ungeorectified
    - Twin Otter calibrated radiance georectified
    - 1999 option ER-2 calibrated radiance georectified
- Assist AVIRIS investigators
- Maintain AVIRIS website

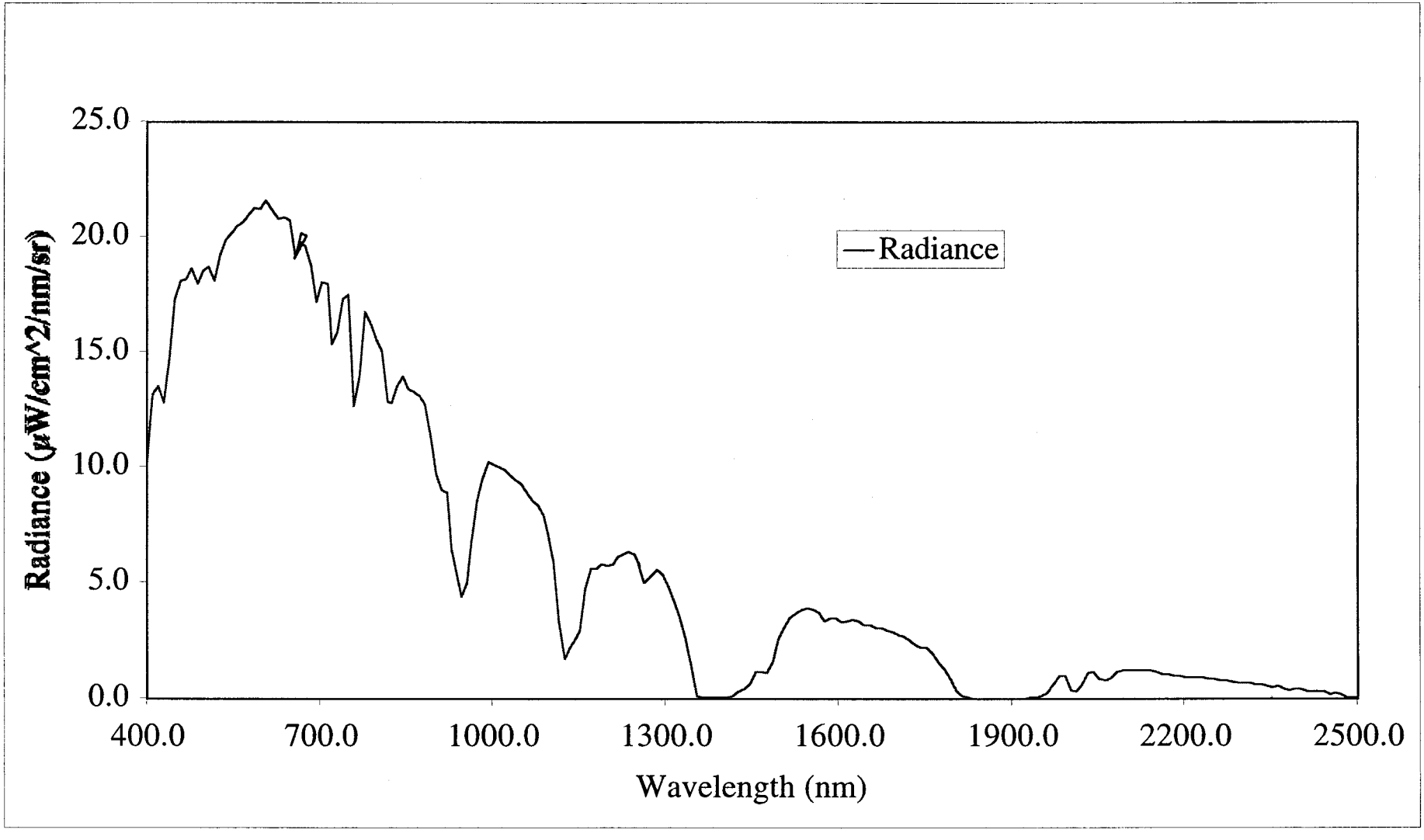
Primary Output to Investigators

Generate and deliver calibrated radiance imaging spectrometer data sets from the raw data recorded by AVIRIS

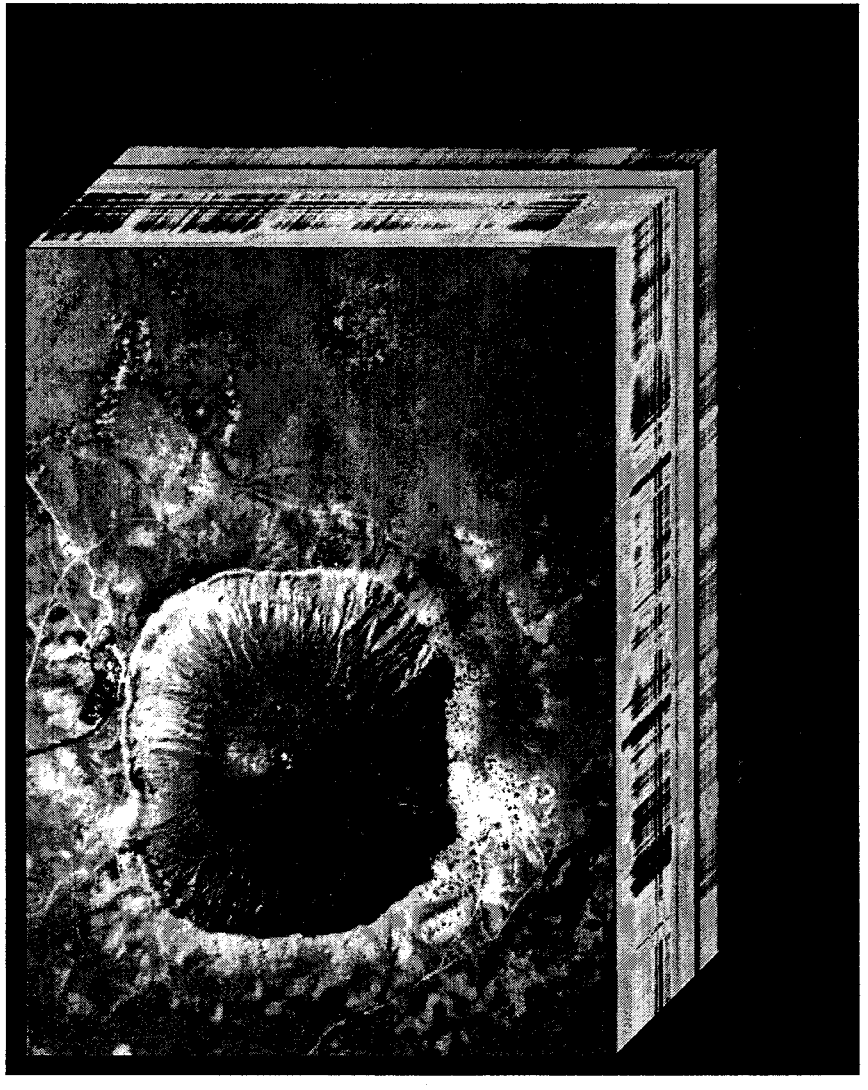
Uncalibrated Data



Calibrated Spectral Radiance



AVIRIS Spectral Image Cube



HISTORY

- 1987 Data system
  - Evolved from 1984 AIS data system
  - Vax 11/780
  - VMS based
  - Archive tapes by hand
  - Calibration of ~1 AVIRIS scene per day (140MB)

- 1992 Data system
  - SUN 4/490 based
  - Sybase data base used to control all
  - Monolithic code updated for each year
  - Archive tapes by hand
  - Calibration of ~10 scenes per day

HISTORY continued

- 1997 Data system
  - SUN 1000 Unix based
  - No commercial data base
  - 14 terabyte mass storage device
  - One set of programs for each years data
  - Calibration of up to ~100 AVIRIS scene per day

- 1999 Data system
  - SUN 3000 Unix based
  - Georectification software added
  - Calibration of up to ~100 scenes per day

CURRENT STATUS

- Master archive of all AVIRIS data from 1992 to present
  - 1992 236 GB
  - 1993 348 GB
  - 1994 607 GB
  - 1995 428 GB
  - 1996 403 GB
  - 1997 317 GB
  - 1998 647 GB
  - 1999 840 GB

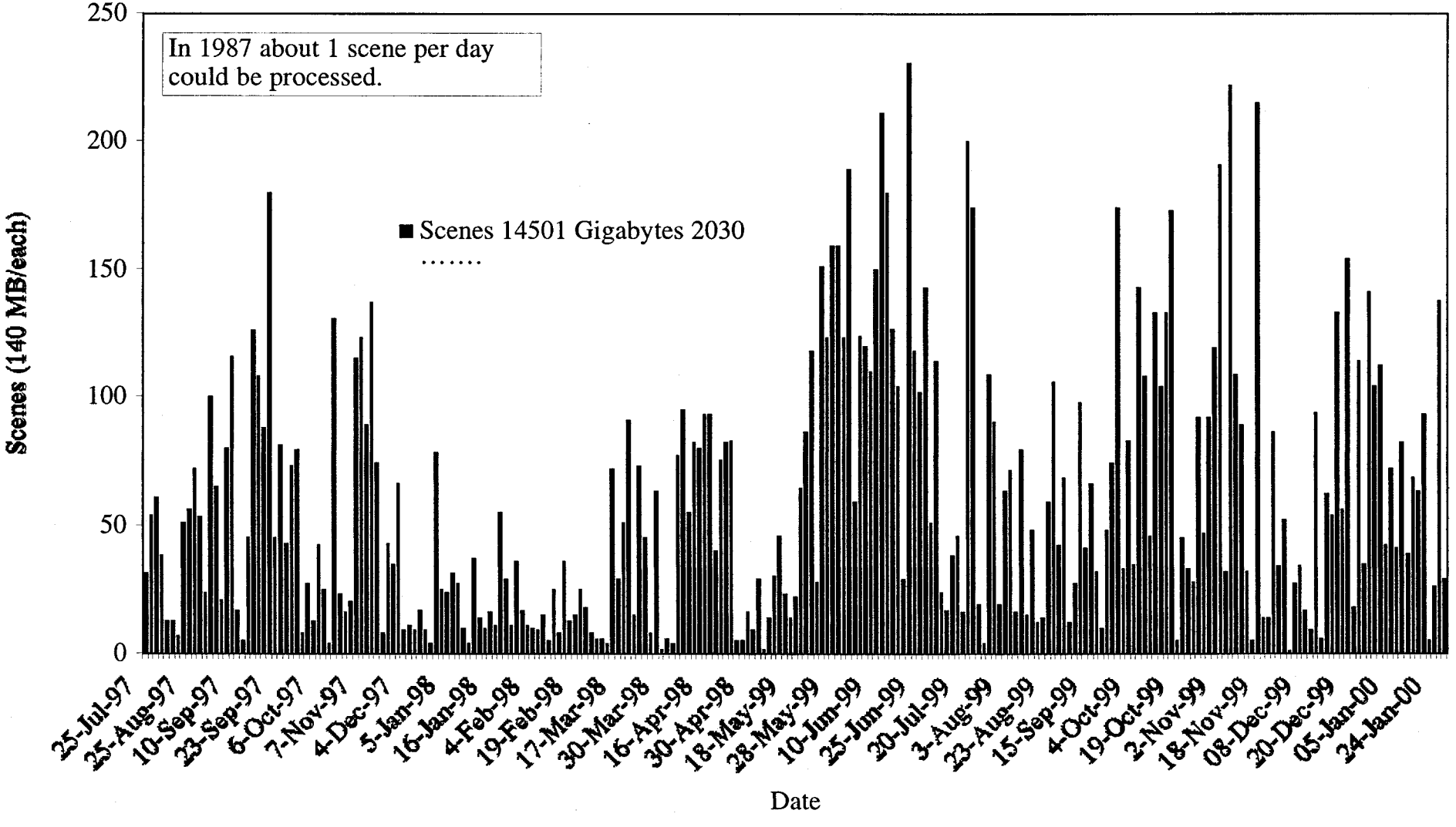
- Total 3.837 terabytes

CURRENT STATUS

- AVIRIS software version for each year
  - Archive
  - Performance Evaluation
  - Calibration
  - Distribution
  - Georectification
  - Quicklooks
  - Engineering and trend analysis

- AVIRIS website

AVIRIS Data Distribution



CURRENT CHALLENGES

- Flat funding causes loss of workforce every year
- When AVIRIS is flying archiving and performance evaluation take top priority
- Transition from one to four calibration and distribution options in 1998-1999 is impacting ability to distribute all the data in a timely manner
- More data collected every year

PLANS for 2000

- Continue to offer the four types of AVIRIS data
- Improve documentation for georectified AVIRIS data
- Implement better order tracking system
- Use the web to distribute some types of data (gps files)
- Work within tightening workforce
- Use academic part time help

SUMMARY AND CONCLUSION

- The AVIRIS Data Subsystem has multiple responsibilities from archiving, to performance evaluation, to engineering support, to data distribution
- The amount of AVIRIS data measured and distributed has grown significantly
- New technology and system design has allowed the growth to be met without cost growth.
- The AVIRIS Data Subsystem is thin, but ready for 2000
- The AVIRIS Data Subsystem may distribute more data with fewer persons than any other data system in NASA